

PowerPlant

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Project Information (EN)

Inspiration & Research

In the early stages of the project, uses for solar technologies were explored creatively in several design sprints. First drafts revolved around questions as to what objects could gain by being energetically self-sufficient, what rituals might emerge by harvesting sunlight, and what services and artefacts could be implemented on a bigger scale. Solar energy has the very appealing potential to create independence and to add onto existing infrastructure, paving the way for a democratic network for and by the public. The concept unites all three principles in a prototype for a public solar charging station and, ultimately, a democratic solar infrastructure. In this context, symbiotic addition to the existing infrastructure was a key point of the design to prevent lengthy processes in the construction of new objects in the urban space, while saving resources. To explore our concept and its potential, a functional rough prototype was built to put it into a public context and see if and how people would interact with it. These findings informed the next steps we took in our design approach, such as the shape of the device holder.

Technology & Design Process

We decided to use the LSC (luminescent solar cell) technology. The luminescent sheet material breaks longwave into shortwave lightrays and concentrates the solar energy along the edges, where it gets harvested by monocrystalline solar cells. This technology is especially effective in diffuse light conditions. The design process was started with scaled versions of the charging stations made out of paper and cardboard to get a sense of scale and shape. Visually, the collector itself was inspired by similar „collectors“ found in nature, such as leaves or mushrooms. Designing the collector shape was done through small paper cutouts, which were grouped and bent in different directions to define a shape that looked natural and familiar without being undefined. The holding bracket for the collector needs to have good static qualities without looking too bulky. For that purpose, steel pipes can be bent into a shape that relates to the form of the collector.

Prototype & Outlook

The first prototype of PowerPlant can be installed on poles starting from a 8cm diameter by attaching the bracket with clamp straps. The monochrome yellow color scheme was a deliberate choice, to work as a signal in urban spaces and to visually connect the product more to its power source, the sun. The solar cells that collect the energy along the edges are protected by an edge protection profile made of rubber. From there, the power is led via cable into the holding bracket where two batteries are stored and get charged continuously. This allows for charging at night or in poorer light conditions. The lowest part of the holder is detachable so that the electronics can be easily accessed in case of malfunctions or repair requirements. All components are easily separable from each other to allow for reuse and recycling. The next step in the project is to take the focus off the object and develop PowerPlant as a network that not only acts as an advertisement for the products but can be used by the public to inform themselves about PowerPlant and organize to demand action from cities and communities. This is how a truly democratic solar infrastructure will be created.

Image List

Filename	Caption	Credit
0-powerplant-k_1661451598.jpg		
1-powerplant-k_1661451620.jpg		

Filename	Caption	Credit
3-powerplant-k_1661451628.jpg		
7-powerplant-k_1661451894.jpg		
7-powerplant-k_1661451979.jpg		

The images above are included in the ZIP under /images.